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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/542,782
Filing Date: April 04, 2000
Appellant(s): LITTLE, JOSEPH R.

MAILED

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GROUP 2800

Brick Power
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed January 18, 2005 appealing from the Office action mailed August 18, 2004.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

This appeal involves claims 1-60.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

The amendment after final rejection filed on October 18, 2004 has been entered.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

The following is a listing of the evidence (e.g., patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of claims under appeal.

5,852,497	Pramanik et al.	12-1998
5,361,150	Noguchi	11-1994
5,889,593	Bareket	3-1999
4,585,931	Duncan et al.	4-1986

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 21, 23, 32, 33, and 36-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Pramanik et al. US Patent No. 5,852,497.

Regarding Claim 21, Pramanik et al. teaches (see Fig. 2A) a method of determining a destination for a semiconductor device substrate (202) comprising identifying a mark (see Col. 3, lines 43-52) comprising at least one recess (206) within a surface of the semiconductor device substrate and covered with at least one layer of material (210) substantially opaque to at least some wavelengths of electromagnetic radiation (see Col. 4, lines 54-56), by scanning (see Col. 4, line 65 to Col. 5, line 2, Col. 5, lines 27-39) electromagnetic radiation of at least one wavelength across at least a portion of the semiconductor device substrate having the recess, the at least one wavelength capable of at least partially penetrating (see Col. 4, lines 54-56) the material, measuring (see Col. 3, lines 39-42) an intensity of radiation of at least one wavelength reflected

by different locations of said at least a portion of the semiconductor device substrate, detecting (see Col. 7, lines 56-67 and Col. 8, lines 6-9) locations at which said intensity changes from substantially a baseline intensity, and correlating (see Col. 3, lines 51-52) each location at which said intensity changes to identify the mark (see Col. 1, lines 63-65 and Col. 10, lines 38-40), and identifying (see Col. 1, lines 14-20 and 25-30) a predetermined destination (position/alignment of wafer with respect to a stepper- see Col. 1, lines 25-30) for the semiconductor device substrate based on the mark (see Col. 10, lines 40-44).

Regarding Claim 23, Pramanik et al. teach scanning effected over a portion of the wafer comprising semiconductor material (silicon substrate) where the mark is located (see Fig. 2A).

Regarding Claim 32, Pramanik et al. teach the scanning effected from above the substrate (see Fig. 2A).

Regarding Claim 33, Pramanik et al. teach the scanning effected at a non-perpendicular angle relative to the substrate (see Fig. 2A).

Regarding Claim 36, Pramanik et al. teach the intensity measurement using a reflectometer (see Col. 3, lines 39-43 and Col. 5, lines 46-50).

Regarding Claim 37, Pramanik et al. teach identifying the location in which said electromagnetic radiation was reflected (θ_2, θ_3 – see Fig. 2A and Col. 6-8).

Regarding Claim 38, Pramanik et al. teach identifying the location in which said electromagnetic radiation was directed (θ_1- see Fig. 2A and Col. 3, lines 38-43).

3. Claims 41 and 49-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Noguchi US Patent No. 5,361,150.

Regarding Claim 41, Noguchi teaches (see Fig. 4 and 6) a system for identifying a marking (4) on a substrate indicative of a type of semiconductor device being fabricated on the substrate (see Col. 6, lines 5-17) and at least partially covered by at least one layer of material (8, 11), comprising at least one radiation source (see Col. 5, lines 12-15) configured and positioned to direct electromagnetic radiation of at least one wavelength toward a substrate (see Col. 5, lines 16-20), the at least one wavelength capable of at least partially penetrating a material substantially opaque to at least some wavelengths of electromagnetic radiation (see Col. 5, lines 16-18), at least one reflectometer (see Col. 5, lines 22-25) positioned so as to receive electromagnetic radiation of the at least one wavelength reflected from a location of the substrate covered with a material substantially opaque to at least some wavelengths of electromagnetic radiation ("reflection method"- see Col. 5, lines 22-25), and at least one processor (performing OCR ("optical character recognition")- see Col. 5, lines 47-50) associated with the reflectometer (see Col. 6, lines 1-3) for analyzing (inherent function in OCR) a pattern of intensities (from contrast- see Col. 5, lines 9-12 and 22-25) of electromagnetic radiation of the at least one wavelength reflected from a plurality of locations (7) (see Col. 5, lines 3-12) of the substrate and for correlating (inherent function in OCR) the pattern of intensities to a known identifier (character) associated with the marking and to the type of semiconductor device being fabricated on the substrate (see Col. 6, lines 5-8).

Regarding Claim 49, Noguchi teaches (see Col. 5, lines 12-15) the at least one radiation source configured to emit incident radiation of wavelengths of about 100 nm to about 1,000 nm.

Regarding Claim 50, Noguchi teaches (see Col. 5, lines 12-15) the at least one radiation source configured to emit incident radiation of wavelengths of about 190 nm to about 800 nm.

Regarding Claim 51, Noguchi teaches (see Col. 5, lines 12-15) the at least one radiation source configured to emit incident radiation of wavelengths of at least about 140 nm.

Regarding Claim 52, Noguchi teaches (see Col. 5, lines 12-15) the at least one radiation source configured to emit incident radiation of wavelengths of about 220 nm to about 800 nm.

Regarding Claim 53, Noguchi teaches (see Col. 5, lines 12-15) the at least one radiation source configured to emit incident radiation of wavelengths of about 300 nm to about 780 nm.

Regarding Claim 54, Noguchi teaches (see Col. 5, lines 12-15) the at least one radiation source configured to emit incident radiation of wavelengths of "about" 550 nm.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 3, 12, 13, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pramanik et al. in view of Noguchi.

Regarding Claims 1, 3, 12, 13, and 16-18, Pramanik et al. teach (see Fig. 2A) a method for identifying a mark (see Col. 3, lines 43-52) comprising recesses (206) in a substrate surface (202) through at least one layer (210) formed over the mark, comprising scanning (see Col. 4, line 65 to Col. 5, line 2, Col. 5, lines 27-39) electromagnetic radiation of at least one wavelength across at least a portion of the substrate including the recess, the at least one wavelength capable of at least penetrating (see Col. 4, lines 54-56) a material substantially opaque to at least some

wavelengths of electromagnetic radiation, measuring (see Col. 3, lines 39-42) an intensity of radiation of at least one wavelength reflected by different locations of said at least a portion of the substrate, detecting (see Col. 7, lines 56-67 and Col. 8, lines 6-9) locations at which said intensity changes from substantially a baseline intensity, and correlating (see Col. 3, lines 51-52) each location at which said intensity changes to identify the mark. Regarding Claim 3, Pramanik et al. teach scanning effected over a portion of the wafer comprising semiconductor material (silicon substrate) where the mark is located (see Fig. 2A). Regarding Claim 12, Pramanik et al. teach the scanning effected from above the substrate (see Fig. 2A). Regarding Claim 13, Pramanik et al. teach the scanning effected at a non-perpendicular angle relative to the substrate (see Fig. 2A). Regarding Claim 16, Pramanik et al. teach the intensity measurement using a reflectometer (see Col. 3, lines 39-43 and Col. 5, lines 46-50). Regarding Claim 17, Pramanik et al. teach identifying the location in which said electromagnetic radiation was reflected (θ_2, θ_3 – see Fig. 2A and Col. 6-8). Regarding Claim 18, Pramanik et al. teach identifying the location in which said electromagnetic radiation was directed (θ_1- see Fig. 2A and Col. 3, lines 38-43). Pramanik et al. do not teach correlating each intensity change location to at least one characteristic which distinguishes the mark from other marks on or in the substrate and to identify the type of semiconductor device being fabricated on the substrate. Noguchi teaches (see Fig. 6) a similar device, with a mark (7) on a substrate (1) with a layer (8, 11) formed over the mark substantially opaque to at least some wavelengths of electromagnetic radiation (see Col. 5, lines 16-18), with correlating each location at which the intensity changes ("contrast"- see Col. 5, lines 22-23) to at least one characteristic (character- see Col. 5, lines 45-47 and Col. 5, line 66 to Col. 6, line 5) which distinguishes the mark from other marks on or in the substrate and to

identify the type of semiconductor device being fabricated on the substrate (see Col. 6, lines 5-17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to correlate each intensity change location to at least one characteristic which distinguishes the mark from other marks on or in the substrate and to identify the type of semiconductor device being fabricated on the substrate, as taught by Noguchi, in the method of Pramanik et al., to provide recognition of unique identification features for each substrate for traceability and improved product control, as taught by Noguchi (see Col. 1, lines 35-42).

6. Claims 2, 6-11, 14, 15, 22, 26-31, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pramanik et al. (in view of Noguchi for Claims 2, 6-11, 14, and 15).

Regarding Claims 2 and 22, Pramanik et al. (in view of Noguchi for Claim 2) teach the method as taught in Claims 1 and 21, according to the appropriate paragraph above. Pramanik et al. do not teach raster scanning for the light source. It is well known in the art to use raster scanning as a conventional method of scanning a beam of light for detection, as it is the most straightforward and simple procedure of directing light. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use raster scanning in the method of Pramanik et al. (in view of Noguchi for Claim 2), to utilize a well-known process for light scanning and provide a straightforward system for illumination of the edges.

Regarding Claims 6-11 and 26-31, Pramanik et al. (in view of Noguchi for Claims 6-11) teach the method as taught in Claims 1 and 21, according to the appropriate paragraph above. Pramanik et al. also teach (see Col. 3, lines 30-40) determining the optimal wavelength to use according to the type and thickness of the opaque layer. Pramanik et al. do not teach emitting the

light wavelengths as claimed. It is well known in the art to use different wavelengths of light to penetrate different materials, depending on the composition of the material, and that wavelengths outside of the absorption range of the material do not penetrate the material and hence do not affect the detection of the mark. It would have been obvious to one of ordinary skill in the art at the time the invention was made to the light wavelengths as claimed in the method of Pramanik et al. (in view of Noguchi for Claims 6-11), to enable scanning of the alignment mark for different polysilicon layer compositions and utilize various light sources emitting a wide wavelength range.

Regarding Claims 14, 15, 34, and 35, Pramanik et al. (in view of Noguchi for Claims 14 and 15) teach the method as taught in Claims 1 and 21, according to the appropriate paragraph above. Pramanik et al. also teach the alignment process where the wafer is positioned with respect to the surrounding components (see Col. 1, lines 14-20 and 25-30). Pramanik et al. do not teach moving a source of electromagnetic radiation relative to the substrate or moving the substrate relative to the source. It is design choice as to which component is actually moved, as long as both components of the system are repositioned relative to each other. It would have been obvious to one of ordinary skill in the art at the time the invention was made to move either the source or the substrate in the method of Pramanik et al. (in view of Noguchi for Claims 14 and 15), to enable the most delicate component to remain static while moving the other component, to prevent damage to the components while performing the alignment process.

7. Claims 4, 5, 19, 20, 24, 25, 39, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pramanik et al. (in view of Noguchi for Claims 4, 5, 19, and 20) in view of Bareket US Patent No. 5,889,593.

Regarding Claims 4, 5, 24, and 25, Pramanik et al. (in view of Noguchi for Claims 4 and 5) teach the method as taught in Claims 1 and 21, according to the appropriate paragraph above. Pramanik et al. do not teach directing and measuring the intensities of a plurality of wavelengths from the radiation source. Bareket teaches directing and measuring intensities of a plurality of wavelengths from a radiation source reflected off the substrate (see Col. 5, lines 10-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a plurality of wavelengths as taught by Bareket in the system of Pramanik et al. (in view of Noguchi for Claims 4 and 5), to provide detection from multiple penetration characteristics of the opaque layer for improved mark detection and recognition through varied contrast between each wavelength.

Regarding Claims 19, 20, 39 and 40, Pramanik et al. (in view of Noguchi for Claims 19 and 20) teach the method as taught in Claims 1 and 21, according to the appropriate paragraph above. Pramanik et al. do not teach mapping the location at which the intensity of electromagnetic radiation varies from baseline intensity or recognizing the mark based on the mapping. Bareket teaches (see Fig. 3) a detection system for a mark on a semiconductor substrate with a radiation source (50), a reflectometer (72, 73, 74, 76, 78) to receive electromagnetic radiation reflected from the substrate, and a processor (82, 138) for analyzing an intensity (see Col. 7, lines 49-55) of electromagnetic radiation of said at least one wavelength reflected from said location of said substrate, comparing (see Col. 7, lines 55-60) the detected

intensity to a baseline intensity, under control of a computer program (running on the processor (82)), storing (see Col. 9, lines 34-37) in memory the location where the intensity varies from the baseline intensity, mapping (see Col. 8, lines 11-15) the locations where an intensity varies from a baseline intensity (as multiple locations are mapped and the measurement locations and data are stored in memory) (see Col. 9, lines 34-37), and identifying (see Col. 8, lines 50-56) a surface feature based on the mappings, under the control of at least one program (running on the processor (138)). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the mapping and recognizing functions of the processor in Bareket in the method of Pramanik et al. (in view of Noguchi for Claims 19 and 20), to efficiently provide determination and location of the alignment mark in order to correctly align the semiconductor wafer as desired by Pramanik et al. (see Col. 1, lines 25-30 and Col. 2, lines 59-64).

8. Claims 42-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi in view of Duncan et al. US Patent No. 4,585,931.

Regarding Claims 42-45, Noguchi teaches the system as taught in Claim 41, according to the appropriate paragraph above. Noguchi does not teach a logic circuit comparing the detected intensity to a baseline intensity. Bareket teaches (see Col. 7, lines 55-60) logic circuits for comparing the detected intensity to a baseline intensity, under control of a computer program (running on the processor (82)), storing (see Col. 9, lines 34-37) in memory the location where the intensity varies from the baseline intensity, mapping (see Col. 8, lines 11-15) the locations where an intensity varies from a baseline intensity (as multiple locations are mapped and the measurement locations and data are stored in memory) (see Col. 9, lines 34-37), and identifying

(see Col. 8, lines 50-56) a surface feature based on the mappings, under the control of at least one program (running on the processor (138)). It would have been obvious to one of ordinary skill in the art at the time the invention was made to compare the detected intensity to a baseline intensity, store the locations of variances, and map the locations in the system of Noguchi, to measure an entire area for identification detection markings and provide a detailed contour mapping of the substrate.

Regarding Claim 46, Noguchi teaches the system as taught in Claim 41, according to the appropriate paragraph above. Noguchi does not teach an actuation apparatus for moving the radiation source or the substrate. Bareket teaches (see Fig. 3) a similar device, with an actuation apparatus (132) (see Fig. 7) for moving a substrate (68) (see Col. 8, lines 18-28). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an actuation apparatus as taught by Bareket in the system of Noguchi, to load and unload the substrates between a storage environment and a stage, as taught by Bareket (see Col. 8, lines 29-33).

Regarding Claims 47 and 48, Noguchi teaches the system as taught in Claim 41, according to the appropriate paragraph above. Noguchi does not teach directing and measuring the intensities of a plurality of wavelengths from the radiation source. Bareket teaches (see Fig. 3) a similar device, with directing and measuring intensities of a plurality of wavelengths from a radiation source (50) reflected off a substrate (68) (see Col. 5, lines 10-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a plurality of wavelengths as taught by Bareket in the system of Noguchi, to provide detection from multiple

penetration characteristics of the opaque layer for improved mark detection and recognition through varied contrast between each wavelength.

9. Claims 55-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi in view of Duncan et al. US Patent No. 4,585,931.

Regarding Claims 55 and 56, Noguchi teaches the system in Claim 41, according to the appropriate paragraph above. Noguchi does not teach the at least one radiation source positioned to emit incident radiation toward an active surface of the substrate at a non-perpendicular angle thereto. Duncan et al. teach (see Fig. 2) a similar device for identifying a marking (32) on a substrate (30), with a radiation source (36) positioned to emit incident radiation (37) toward an active surface (top) of the substrate at a non-perpendicular angle thereto. It would have been obvious to one of ordinary skill in the art at the time the invention was made to position the at least one radiation source to emit incident radiation toward an active surface of the substrate at a non-perpendicular angle thereto as taught by Duncan et al. in the system of Noguchi, to provide increased contrast to distinctively identify the markings.

Regarding Claims 55 and 56, Noguchi teaches the system in Claim 41, according to the appropriate paragraph above. Noguchi does not teach a user interface or at least one output device associated with the at least one processor. Duncan et al. teach (see Fig. 2) a similar device for identifying a marking (32) on a substrate (30), with a user interface and output device (57) associated with a processor (56) for analyzing the pattern of intensities from a reflectometer (38). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a user interface or output device associated with the processor as taught by

Duncan et al. in the system of Noguchi, to provide a user display for operator viewing of the marking information.

10. Claims 59 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bareket in view of Noguchi.

Bareket teaches (see Figs. 4 and 7) a processor (82, 138) for characterizing a marking in a substrate comprising a logic circuit (82) for comparing (see Col. 7, lines 56-67 and Col. 8, lines 6-9) a measured intensity of at least one wavelength of reflected radiation to a baseline intensity of said at least one wavelength of radiation reflected from a planar portion of said substrate, and at least one logic circuit (138) for mapping (see Col. 8, lines 11-15) a plurality of locations of said substrate where said measured intensity differs from said baseline intensity (as multiple locations are mapped and the measurement locations and data are stored in memory) (see Col. 9, lines 34-37), under control of at least a portion of at least one program (running on the processor (138)), a map (see Col. 8, lines 47-53) resulting from said mapping comprising a digital image (images in a microprocessor are inherently digital) of the marking. Regarding Claim 60, Bareket teaches (see Fig. 7) a logic circuit (138) for characterizing (see Col. 8, lines 50-56) the recess based on the plurality of locations mapped by the at least one logic circuit for mapping, under control of at least a portion of a program (running on the processor (138)). Bareket does not teach the marking as material-covered and recessed, or at least one logic circuit for identifying a type of semiconductor device that corresponds to the mapped locations. Noguchi teaches (see Fig. 4 and 6) a similar device, with a marking (space etched on (7)) that is material-covered (8, 11) and recessed (see Fig. 6), with at least one logic circuit (performing OCR- see Col. 5, lines

45-47 and Col. 6, line 1 to Col. 5) for identifying a type of semiconductor device (see Col. 6, lines 5-8) that corresponds to mapped locations of intensities (contrast detected from sensor device- see Col. 5, lines 9-12 and 22-25 and Col. 6, lines 1-2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the marking as material-covered and recessed and to provide at least one logic circuit for identifying a type of semiconductor device that corresponds to the mapped locations, as taught by Naguchi, in the processor of Bareket, to provide unique substrate identification for traceability and improved product control, as taught by Noguchi (see Col. 1, lines 35-42).

(10) Response to Argument

Pramanik - Claims 21, 23, 32, 33, and 36-38

Applicant argues that Pramanik does not describe evaluating the STI structures for the purpose of determining the next destination for a wafer or other semiconductor structure, but rather, that the wafer may be finely aligned so that a mask may be accurately and precisely positioned over the wafer, as stated in Applicant's appeal brief (see Page 9, last paragraph to Page 10, 1st paragraph). While Applicant's particular invention is directed towards a "destination" defined as one of plural different fabrication process locations depending on the identification of the semiconductor wafer, as stated in Applicant's specification (see Page 7, lines 22-24), a reasonable interpretation of "destination" does not require the level of inter-component separation as stated by Applicant. As interpreted by the Examiner, a "destination" includes a particular location within a system or surface, such as the system of Pramanik, wherein a destination corresponds to the proper alignment of the wafer with the other semiconductor manufacturing components to enable proper

photolithography and etching (see Pramanik, Col. 1, lines 14-20), and wherein the wafer is positioned to its destination (see Col. 1, lines 27-30). Further, the destination of Pramanik is predetermined, since the desired alignment between the semiconductor wafer and the manufacturing components are already known in advance. Therefore, Claims 21, 23, 32, 33, and 36-38 are properly rejected under 35 U.S.C. 102(b) by Pramanik.

Noguchi - Claims 41 and 49-54

Applicant argues that there is not requirement in Noguchi that sensor devices used to detect the marking formed by the character pad 13, and therefore lacks any inherent description of a system with a radiation source, as the character pad 13 may be "visually viewed by a human being and by sensor devices" (Col. 5, lines 9-12). Examiner asserts that the relevant citing of Col. 5, lines 9-12 by Noguchi merely recites alternative embodiments, by using a human factor to view the marking or by using an optical sensor, depending on the desired level of complexity and automation. Therefore, by using the optical sensor embodiment (further described in Col. 5, lines 22-25 and a requirement for the OCR function to electronically recognize the characters through imaging, described in Col. 5, lines 45-47), Noguchi teaches the sensor device as recited in Applicant's Claim 41, along with the radiation source configured and positioned to direct, towards a substrate, electromagnetic radiation of at least one wavelength capable of at least penetrating a material that is substantially opaque to at least some wavelengths of electromagnetic radiation, as described by Noguchi (see Col. 5, lines 12-25). Therefore, Claims 41 and 49-54 are properly rejected under 35 U.S.C. 102(b) by Noguchi.

Pramanik in view of Noguchi - Claims 1-3 and 6-18

Applicant argues that Noguchi teaches away from the asserted combination, as Pramanik is directed towards techniques including visualizing STI features or characters through at least one layer of material which is opaque to at least some wavelengths of electromagnetic radiation, while Noguchi limits layers that cover a marking to visibly transparent materials. Examiner asserts that Pramanik is deficient from the limitations of Claim 1 by the ability to distinguish and identify a certain semiconductor mask from other masks. This particular limitation does not relate to the specific structure of the layering, but rather just promotes a feature to enable additional functionality, and furthermore, the ability to provide features in layers of material opaque to at least some wavelengths of electromagnetic radiation is already utilized in Pramanik for an alignment mark. Therefore, the combination of the teachings of Noguchi, in particular, the OCR feature to distinguish and identify a particular mask (see Col. 5, lines 45-47 and Col. 5, line 66 to Col. 6, line 8) to satisfy the deficiencies of Pramanik, does not require the combination of any details regarding the various layers of Noguchi. Therefore, Claims 1-3 and 6-18 are properly rejected under 35 U.S.C. 103(a) over Pramanik in view of Noguchi.

Bareket in view of Noguchi - Claims 59 and 60

Applicant argues that neither Bareket nor Noguchi teaches or suggests a baseline intensity of the at least one wavelength of radiation reflected from "a planar portion of the substrate", and that Bareket and Noguchi are conventional optical recognition systems, in which it is not necessary to use a "planar portion of [a] substrate" as a reference point. Examiner asserts that the entire top surface of a semiconductor wafer substrate is planar, as seen in Bareket, in Fig. 3, and therefore,

the intensities, both measured and baseline, are representative of reflection off a planar portion of the substrate. Furthermore, the teachings of Bareket are directed towards comparing the measured intensity to a baseline reference intensity (see Col. 7, lines 56-67). Since the reference data is compared to measured data, the reference data must represent values as reflected off the "planar" portion of the substrate, as since the baseline intensity is compared to an actual measured intensity of the at least one wavelength of radiation reflected from "a planar portion of the substrate", it must also be representative of an intensity of the at least one wavelength of radiation reflected from "a planar portion of the substrate". Also, since the limitations of the claim simply recite the intensity as a value characterized by certain characteristics (intensity of the at least one wavelength of radiation reflected from "a planar portion of the substrate"), it is not necessarily required to actually perform measurement to determine the baseline intensity, as the intensity is simply representative of the intensity of the at least one wavelength of radiation reflected from a planar portion of the substrate, as interpreted by the limitations of the claim language. Therefore, Claims 59 and 60 are properly rejected under 35 U.S.C. 103(a) over Bareket in view of Noguchi.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

SY SY

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